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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of

Amendment of Part 95 of the
Commission's Rules to Establish
a Very Short Distance Two Way
Voice Radio Service

WT Docket No. 95-102
RM 8499

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REPLY COMMENTS OF MOTOROLA, INC.

Motorola, Inc. hereby submits its reply comments in the above captioned proceeding. The Commission had established an October 16, 1995 deadline for these comments. However, on October 13, 1995, the FCC gave public notice that it had dismissed a timely-filed extension request. Under Section 1.46 of the FCC's rules, parties are provided 2 business days to file their pleadings after such an action. Thus, the comment deadline was thereby automatically extended until October 17, 1995. See 47 C.F.R. 1.46 and 47 C.F.R. 1.4.

Please contact the undersigned if there are any questions concerning these comments.

Respectfully Submitted,

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REPLY COMMENTS OF MOTOROLA, INC.

Motorola Inc. ("Motorola") submits these replies to comments filed in response to the Commission's *Notice of Proposed Rule Making* ("Notice") in the above captioned proceeding.¹ Upon review of the submitted comments, Motorola believes that the public interest is best served by the expeditious adoption of the FCC's proposals with appropriate minor modifications to the technical standards for the proposed service.

I. SUMMARY

The Family Radio Service is intended to serve the needs of individuals and consumers for very short distance, two-way voice communications. Interconnection with the public switched telephone network would not be permitted. In essence, the proposed service would provide a total of 14 channels for consumer grade "walkie talkie" type radios that families, grass root organizations and outdoor enthusiasts would be able to use for short, personalized communications. In order to ensure that the service is readily available to the broadest segments of consumers, the FCC proposed to classify the Family Radio Service as a subset of the Citizens Band Radio Service and to authorize operation by rule rather than individual licensing.

¹ Amendment of Part 95 of the Commission's Rules to Establish a Very Short Distance Two-Way Radio Service, FCC 95-261 (released Aug. 2, 1995) [hereinafter *Notice*].

Supporters of the Commission's proposals include major manufacturers such as Motorola, Radio Shack, Uniden and Cobra Electronics who principally view the Commission's proposals as an opportunity to reach new markets for wireless communications devices. These commenters agree with the Commission's tentative conclusion that there is a substantial need for a good quality, short range unlicensed voice service that would be convenient to use and widely affordable. Other supporters of the general concept include existing licensees in the General Mobile Radio Service (GMRS) who view that service's cumbersome licensing process as impeding to its full development. However, GMRS licensees form the principal opposition to the Commission's proposals as they argue that the technical standards proposed by the Commission are insufficient to protect existing GMRS operations from harmful interference and that unlicensed Family Radio Service users will lack the operational discipline to coexist on frequencies also utilized by licensed GMRS operators.

Upon review of the comments, Motorola remains convinced that the Family Radio Service will satisfy a great demand in this country and is spending millions of dollars in preparation of serving this untapped market. The potential uses of this service are wide ranging: parents keeping track of children, friends and families traveling in car caravans staying in contact on the open road, hunters, hikers, and mountain climbers using radio to enhance their personal safety, and neighborhood watch groups increasing the effectiveness of their patrols. As pointed out in the comments, none of the Commission's existing radio services adequately addresses such needs. Therefore, a spectrum allocation to the Family Radio Service would serve the public interest.

Motorola also believes that the proper spectrum home for the Family Radio Service is the 12.5 kHz channels interstitial to the 460 MHz primary GMRS channels. Unlike other spectrum alternatives mentioned by some commenters, the 460 MHz band offers the propagation characteristics necessary to provide good quality voice communications at low cost without the need for advanced and expensive modulation schemes. The technical

concerns raised about harmful interference to GMRS operations are mitigated by appropriate reductions in authorized bandwidth and greater frequency stability.

Furthermore, the expressed concerns about the de-licensing aspect of the Family Radio Service are misplaced. Appropriate technical standards, coupled with the fact that Family Radio Service operations will not be permitted to operate on the primary GMRS channels, will provide adequate protection to GMRS stations. Given the highly itinerant nature of the typical Family Radio Service operation, any licensing requirement would provide little benefit in terms of spectrum management. Frankly, it appears that many of the opponents of the Family Radio Service view a licensing requirement as necessary simply to limit the appeal of the service. Such a motive does not serve the public interest, convenience and necessity.

Motorola therefore urges the Commission to proceed quickly and finalize the rules for the Family Radio Service. In so doing, the public will be provided with a new wireless communications option designed to offer short range voice communications at a cost and convenience factor not realized by any other existing radio service. Likewise, manufacturers will be provided with an opportunity to create new jobs necessary for developing new radio lines that promise tremendous export potential. For these reasons, Motorola believes the Family Radio Service to be in the public interest and looks forward to offering a full range of products for this potentially large market.

II. THERE IS A STRONG NEED FOR A FAMILY RADIO SERVICE

In its comments, Motorola stated that in its role as a leading manufacturer of wireless communications devices, it has observed that a "sizable market" exists for low-cost two-way radios capable of providing greater functionality than Citizens Band radio but with less regulatory oversight than the GMRS service.² This position was echoed by other equipment manufacturers supporting the Commission's proposals. Radio Shack, for

² Comments of Motorola at 6.

example, states that the proposed service will “enable millions of Americans -- especially small groups such as families, friends and colleagues -- to maintain close contact with only modest investment.”³ Uniden agrees that “this new communications medium will surely benefit many users.”⁴ The Consumer Electronics Group of the Electronic Industries Association “enthusiastically” supports the proposed radio service as well as flexible service rules that maximize consumer choice.⁵ The Telecommunications Industry Association notes that the proposed service “is an appropriate use of underutilized spectrum” that would address the “strong market” for low cost, non-interconnected communications service.⁶ In short, manufacturers of wireless communications product -- the parties that will be required to invest millions of dollars to develop the new service -- are confident that sufficient need exists to warrant such expenditures.

The need for a Family Radio Service is recognized by other parties as well. Representing the interests of commercial mobile radio providers, ALLTEL Mobile Communications believes that the proposed Family Radio Service “can fill a narrow market niche” and commends the FCC for its proposed action.⁷ ALLTEL’s support is predicated on the FCC prohibiting interconnection between Family Radio Service stations and the public switched telephone network.⁸ Even some GMRS proponents indicate that they agree with the motivation of the FCC to create a Family Radio Service. One commenter, for example, “recognize[s] the potential” of the proposed service and agrees that “current

³ Comments of Radio Shack Division of Tandy at 2.

⁴ Comments of Uniden at 2.

⁵ Comments of the EIA/CEG at 1.

⁶ Comments of the Mobile and Personal Communications Private Radio Section of the Telecommunications Industry Association at 1.

⁷ Comments of ALLTEL at 2.

⁸ Id.

technology can create the equipment for such a service at affordable cost to the consumer.”⁹ Another GMRS proponent commends the FCC for “attempting to expand and simplify” family radio use and notes that the “real problem” is the “complex licensing procedure required by the GMRS.”¹⁰ Still another GMRS licensee notes that the “proposal for a Family Radio Service is well founded and will fill a definite need for high quality half-mile to one mile communications for families, private individuals and groups.”¹¹

Motorola believes that the record generated by this proceeding provides strong evidence that there is a real need for a Family Radio Service allocation. The diversity of potential markets as identified by manufacturers defines a strong niche market that offers the potential of hundreds of thousands of sales per year.¹² There is no existing allocation of spectrum capable of handling such a tremendous influx of new users for low cost good quality wireless communications. Therefore, the proposed creation of the Family Radio Service will benefit the public interest.

Motorola has devoted significant research and marketing resources to the proposed service and is committed to offering a wide variety of product as soon as possible. As mentioned in previous comments, we intend to offer product designed to serve the needs of parents keeping in touch with children as well as the outdoor sports enthusiasts. Our research tells us that these users alone represent a multi-million dollar market. Indeed, the viability of this service is without question in the record. As such, the Commission should proceed swiftly to allocate spectrum to this service.

⁹ Comments of W.F. and J.A. Simpson at 1.

¹⁰ Comments of Robert Witte at 1.

¹¹ Comments of Edward W. Boakes at 1.

¹² Even the strong opposition of the GMRS proponents is a reflection of the anticipated demand of the proposed service.

III. THE 460 MHZ GMRS INTERSTITIAL CHANNELS ARE THE APPROPRIATE HOME FOR THE FAMILY RADIO SERVICE

The *Notice* proposed to allocate spectrum for the Family Radio Service from the channels interstitial to the 8 frequency pairs allocated to the GMRS service. The proposed channels for the Family Radio Service would range from 462/467.5625 MHz - 462/467.7125 MHz spaced 25 kHz apart. Authorized bandwidth was proposed to be limited to 12.5 kHz in order to minimize interference to primary GMRS frequencies.

Some commenters argue that the 460 MHz band is a poor choice for the Family Radio Service.¹³ These parties argue that spectrum allocated for Part 15 devices at 900 MHz and 2400 MHz is more appropriate for low power unlicensed devices.

Motorola strongly disagrees with these comments. The 462 and 467 MHz interstitial channels that are partially allocated to the GMRS service represent underutilized spectrum. In other mobile services, the Commission has fostered extensive low power use of interstitial channels and has acknowledged the public benefits derived from such spectrum use.¹⁴ Equally important, however, allocating spectrum in the 460 MHz band allows manufacturers to utilize existing FM technologies as opposed to advanced spread spectrum technologies which will increase equipment costs. This means that the unsatisfied demand of consumers can be met today with existing and reliable technology rather than requiring years of additional research and design. Contrary to the position of the Personal Radio Steering Group who argues that equipment cost should not be a major consideration in proposing the Family Radio Service,¹⁵ Motorola instead concurs with the

¹³ See e.g., Comments of Donald Kipp at 3, Comments of Ernest R. Cameron at 5, and Comments of the Personal Radio Steering Group at 1.

¹⁴ See Report and Order, PR Docket No. 92-235, FCC No. 95-255 [released June 23, 1995] at para. 66.

¹⁵ Comments of the Personal Radio Steering Group at 17.

FCC that the need is to provide for "a widely affordable"¹⁶ service for consumers. For these reasons, the 460 MHz band is an appropriate choice for a low cost consumer radio service.

Other commenters reflect concern that the use of the GMRS interstitial channels would result in interference to the adjacent primary GMRS channels. Motorola notes that the 462 MHz interstitial channels are already available for 5 watt hand-held GMRS radios operating over 25 kHz channels.¹⁷ Thus, a 500 milliwatt Family Radio Service transmitter designed to operate within 12.5 kHz provides far greater interference protection than that already permitted under existing FCC rules.¹⁸

In regards to operations on the 467 MHz interstitial channels that are adjacent to the input frequencies of GMRS repeaters, Motorola believes that with the revised technical standards, as recommended by Motorola in its comments, interstitial operation will not cause excessive interference to GMRS repeaters. Limiting authorized bandwidth to 11.25 kHz and deviation to 2.5 kHz will ensure that signals from Family Radio Service devices will not be sufficient in strength to capture the GMRS repeaters.¹⁹ This position is consistent with the comments submitted by the Personal Radio Steering Group which states that field testing has shown that interference to repeaters from interstitial channel use was

¹⁶ Notice at para. 7.

¹⁷ See 47 C.F.R. Section 95. 29(f).

¹⁸ In this same vein, Motorola believes that the comments of Spacelabs Medical, Inc. reflect an unnecessary concern about interference to biomedical telemetry devices operating 50 kHz away from potential Family Radio Service channels. The specific biomedical frequencies cited by Spacelabs operate within 12.5 kHz of private land mobile channels containing tens of thousands of users operating devices with much higher power than 500 milliwatts. Thus, the potential for increased interference from Family Radio Service operations is extremely minimal. Furthermore, according to Motorola's calculations, the field strength of a properly operating Family Radio Service transmitting device would be well below 3 volts per meter at 3 meters, the minimum RF susceptibility level for medical devices noted by Spacelabs. Comments of Spacelabs Medical Inc. at 6.

¹⁹ Maintaining a tight frequency tolerance is equally important to minimizing interference to adjacent channel operations. Motorola has recommended that the FCC strengthen its proposal to require a frequency tolerance of 0.00025%.

“minimized” by reducing transmitter deviation to less than 3 kHz with output levels reduced to approximately 200 milliwatts.²⁰

In conclusion, the 460 MHz interstitial channels provide the best opportunity for manufacturers to provide consumers with good quality communications at low cost. The technical standards recommended by Motorola would ensure interference free operation to GMRS licensees. For these reasons, the FCC should allocate channels 1 through 14 to the Family Radio Service as proposed in Section 95.627 of the Commission’s *Notice*.

IV. THE COMMISSION SHOULD AVOID IMPOSING UNNECESSARY STANDARDS ON FAMILY RADIO SERVICE DEVICES

As appropriate for a low cost consumer based service, the FCC proposed only minimum technical standards for the Family Radio Service. In regards to equipment requirements, the FCC proposed that Family Radio Service units can only utilize vertically polarized antennas without gain that are integral to the transmitter and are able to use selective calling tones on an optional basis.²¹ Equipment authorization was proposed to be conducted under the certification program.

Several commenters suggest that additional rules and restrictions must be imposed on Family Radio Service units in order to prevent unauthorized and illegal operations. The Personal Radio Steering Group (PRSG), for example would 1) impose further restrictions on antenna design by requiring that the antenna be internal to the radio case, 2) require an automatic transmitter identification code, 3) prohibit any external coupling that controls the transmit function, 4) incorporate a time-out mechanism to limit transmission time, and 5) prohibit the use of certain selective calling techniques on 467 MHz channels.²² Bennett Kobb provides similar comments arguing that compliance with FCC rules must be

²⁰ Comments of the Personal Radio Steering Group at 14.

²¹ See proposed sections 47 C.F.R. 95.193(b) and 47 C.F.R. 95.645.

²² Comments of the PRSG at 6-10.

hardware-based. Mr. Kobb focuses on prohibiting the external RF, transmit audio keying connections or duplex capability.²³

Motorola opposes the imposition of technical standards that will serve to limit the utility of the Family Radio Service. Imposing rigid limitations against external transmitter control circuitry, for example, will prohibit the use of legitimate features such as speaker microphones for hands free operation that will prove beneficial particularly to the sport enthusiasts markets. Likewise, many of the recommendations offered by the commenters are not economically viable. Requiring antennas to remain internal to the radio case itself imposes significant design constraints upon manufacturers and will affect the size and weight of the device itself. Finally, prohibiting the use of PL tones and DPL tones on the 467 MHz channels is unnecessary given the limitations on the authorized emissions of Family Radio Service transmissions. With sufficient attenuation and limited deviation, the tones used by Family Radio Service transmitters will not be “heard” by adjacent channel repeaters

Notwithstanding Motorola’s opposition to restrictive technical standards, there are a few areas where Motorola agrees that the Commission’s proposals warrant revision. For example, PRSG argues that there should be an automatic timer on Family Radio Service transmitters limiting the duration of transmissions. Motorola’s preliminary designs for potential Family Radio Service devices incorporate such a feature. In the case of a consumer radio service where the device could be stored in a purse or a briefcase, for example, with other articles accidentally engaging the push-to-talk button, such a device is necessary to protect battery life. For this particular service, Motorola would agree that a requirement for such a device would be an appropriate interference reducing mechanism adding little cost to manufacturers.

In addition, Motorola notes that the Commission has proposed to use the certification process to authorize Family Radio Service equipment. Although this may be

²³ Comments of Bennett Z. Kobb at 2.

the appropriate choice for unlicensed operations, upon reflection, Motorola would urge the Commission to adopt the more rigorous type acceptance program. Most Family Radio Service transmitters will likely be derived from product line developed for either the GMRS service or other UHF land mobile services. These services all require equipment to be tested under the type acceptance program. Therefore, there should be little additional burden placed on manufacturers to adopt similar policies for the Family Radio Service. Given that type acceptance is a more stringent program, it will provide a greater degree of assurance that these devices will not cause interference to adjacent channel services.

V. FAMILY RADIO SERVICE OPERATIONS SHOULD BE AUTHORIZED BY RULE AS OPPOSED TO INDIVIDUAL LICENSING

The vast majority of the record developed in this proceeding has focused on the Commission's proposal to "de-license" the Family Radio Service and instead authorize operations under Section 307(e) of the Communications Act. On the one hand, manufacturers informed the FCC that the de-licensing proposal was critical for the success of the service so that potential unsophisticated users would not be intimidated by the regulatory process.²⁴ On the other hand, GMRS licensees loudly complained that mixing unlicensed users with licensed operators will recall the days when the Citizens Band service was transformed from a useful communications medium to a band filled with foul-mouthed, over-powered illegal operators.²⁵ In the middle were comments from GMRS operators who recognize the complexity of the existing licensing process and urge the Commission to simplify, rather than eliminate, the requirement.²⁶

²⁴ Comments of Motorola at 6, Comments of TIA at 2.

²⁵ Comments of William M. Chin, Comments of Ernest R. Cameron at 2, Comments of Stephen G. Berk.

²⁶ Comments of Roger Love, Comments of Robert Witte.


Motorola appreciates the frustration of the GMRS licensees but believes the concerns about unlicensed operation are overstated. First and foremost, the Family Radio Service and the GMRS service would not share a common allocation in total. The primary GMRS channels would not be available to Family Radio Service devices. While the two services would share the 462 MHz interstitial channels, there are not a large number of GMRS operations on those channels. Those users of the GMRS interstitials most likely utilize the spectrum for low power, short range communications in a similar manner to that envisioned for the Family Radio Service. Thus, the GMRS and Family Radio Service users of the 462 MHz interstitial channels will most likely be entirely compatible.

In addition, Motorola does not believe that a licensing requirement will provide any of the protections that its proponents desire. Preparing a post-card application and sending a small fee to the FCC -- a cost more than likely absorbed by the manufacturer -- will not ensure that some users will not abuse the operational rules of the FCC as well as common courtesy. Much like communications conducted over the Internet, the user community itself will be required to police activities. In fact, with expanded use, the same issue of illegal operations could affect the existing GMRS service. The alternative, however, of imposing unnecessary regulations simply to reduce the utility of the service is not an attractive option or sound spectrum management policy.

In conclusion, Motorola believes that the proposal to de-license the Family Radio Service is in the best interest of the service and will not result in the catastrophes suggested by some of the comments. Motorola urges the FCC to proceed with this proposal in order to foster the availability of the service to the broadest segments of the population.


VI. CONCLUSION

The FCC has proposed to create a new service that promises to address the needs of millions of Americans for low tier, unsophisticated wireless communications. In so doing, the Commission would be expanding the utilization of spectrum currently not being used to its full potential with minimal impact on existing users. The Commission should move quickly to create the unlicensed Family Radio Service confident that the concomitant needs of the GMRS service can continue to be satisfied in its existing allocation.


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CERTIFICATE OF SERVICE

I, Kim Riddick, hereby certify that on this 17th day of October, 1995, I caused copies of the foregoing "Reply Comments of Motorola, Inc." to be served on the following persons via hand delivery:

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